

ABSTRACT OF THE INVENTION

A fuel injector for an internal combustion engine is disclosed. The fuel injector includes a housing, a valve seat, a metering orifice, and a needle. The housing has an inlet, an outlet, and a longitudinal axis extending therethrough. The valve seat is disposed proximate the outlet and includes a passage having a sealing surface and an orifice. The metering orifice is located at the outlet and has a plurality of metering openings extending therethrough. The needle is reciprocally located within the housing along the longitudinal axis between a first position wherein the needle is displaced from the valve seat, allowing fuel flow past the needle, and a second position wherein the needle is biased against the valve seat, precluding fuel flow past the needle. A generally annular channel is formed between the valve seat and the metering orifice. The channel tapers outwardly from a large height to a smaller height toward the orifice openings. A method of generating turbulence in a fuel flow through a fuel injector is also disclosed.